In re Patent Application of

Nasli-Bakir et al

Application No. 09/700,747

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For: METHOD OF APPLICATION

Attorney Docket No. 000600-036

Confirmation No. 4239

Group Art Unit: 1762

Examiner: William P. Fletcher III

APPEAL BRIEF

Commissioner for Patents
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Sir:

This appeal brief is filed in support of the Notice of Appeal filed August 20, 2006 and further to the decision of the Pre-Appeal Brief Conference mailed September 27, 2006.

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I. Real Party in Interest

The real party in interest is Casco Nobel, AB.

II. Related Appeals and Interferences

There are no related appeals or interferences connected with this appeal.

III. Status of Claims

Claims 1-38 and 47-55 have been cancelled, and claims 39-46 and 56-95 stand finally rejected and are appealed.

IV. Status of Amendments

There are no outstanding amendments.

V. Summary of Claimed Subject Matter

The claimed invention relates to a method of applying an amino resin gluing system to a substrate. As claimed in claim 39, the method includes the steps of feeding an amino resin component to at least a first orifice, feeding a hardener component to at least a second orifice, and discharging the resin and hardener through their respective orifices in the form of strands or spray onto the substrate. The discharged components remain physically isolated from each other until at least one of the components contacts the substrate. The hardener is a volatile acid and is either free from filler or includes filler in an amount of less than 20% by weight. Appellants have found that when the amount of filler in the amino resin adhesive is kept below 20%, as claimed, delamination is greatly reduced. This result was quite unexpected, and is neither taught nor suggested by the prior art. Example 1 of the specification demonstrates and quantifies this unexpected result.

VI. Grounds of Rejection to be Reviewed on Appeal

The Examiner has rejected all of the claims based on the combination of Andersson (EP 0207024) in view of Lehnert (WO 89/05221). Some rejections also include one or more of Perciwall (EP 0016740), Menger (US 2,015,806) and Toshio (JP 61-040137) as additional secondary references. In addition, claim 94 has been rejected under 35 U.S.C. §112, first and second paragraphs.

A personal interview was conducted with Examiner Fletcher and his supervisor, Examiner Meeks, on October 11, 2005. At the interview, it was suggested that appellants prepare and file a Declaration under 37 CFR 1.132 based on the teaching of the primary reference of Andersson, in which data points regarding delamination were presented comparable to those in applicants' Example 1. In addition, it was suggested that the Declaration provide

some rationale that amino resin adhesives other than that used in Example 1 would function in an equivalent manner. Appellants agreed to consider such a declaration. However, after careful consideration, they have instead decided to appeal, on the basis that the Examiner has failed to establish a *prima facie* case of obviousness, and consequently no Declaration under 37 CFR 1.132 is necessary for a finding of patentability.

VII. Issues

A) Are claims 39, 41-45, 56-59, 70-76, 78-82, 84-87, and 89-93 and 95 unpatentable under 35 U.S.C. §103 based on Andersson in view of Lehnert?
B) Are claims 46, 83 and 88 unpatentable under 35 U.S.C. §103 based on Andersson in view of Lehnert, and further in view of Perciwall?
C) Are claims 40 and 77 unpatentable under 35 U.S.C. §103 based on Andersson in view of Lehnert, and further in view of Menger?
D) Are claims 60-64 and 66-69 unpatentable under 35 U.S.C. §103 based on Andersson in view of Lehnert and Toshio?
E) Is claim 65 unpatentable under 35 U.S.C. §103 based on Andersson in view of Lehnert and Toshio, and further in view of Perciwall?
F) Is claim 95 unpatentable under 35 U.S.C. §103 based on Andersson in view of Lehnert and Perciwall?
G) Is claim 94 unpatentable under 35 U.S.C. §112, first and second paragraphs?

Some underlying issues are:

1) Whether phenol and amino resins are equivalent for use as conventional two component adhesives in the art of joining wood surfaces. The alleged equivalence of phenol and amino resins is the basis for the Examiner's citation of Lehnert; it is the "glue" holding together the Examiner's *prima facie* case of obviousness.

2) Even assuming, *arguendo*, the Examiner has established a *prima facie* case of obviousness, is it rebutted by the appellants' showing of unexpected results in the Examples of the specification?

VIII. Grouping of Claims

In addition to the separate bases for rejection presented in the Final Office Action, it is requested that claims 56, 57 and 58 each be considered separately for patentability. These claims recite various levels of filler in the hardener.

IX. Arguments

The Examiner's six bases for rejection on the merits have the common theme of combining the primary reference of Andersson with the secondary reference Lehnert. This combination will be addressed first, followed by discussions of the additional secondary references cited.

A. No *Prima Facie* Case of Obviousness

In the Office Action mailed January 14, 2005, page 7, the primary reference of Andersson is cited for teaching:

> a method of applying a two-component gluing system to a substrate in which the resin component and the hardener component are separately applied to the substrate in the form of separate, parallel strands [abstract]. The components are applied through a nozzle (i.e., orifice) [p.6, ll. 9-17]. The two components do not contact each other until the substrate surfaces are joined together [p. 6, ll. 15-17]....Although Andersson teaches application of the components from a nozzle, the reference does not specify whether it is the same nozzle or two separate, discrete nozzles. Both Perciwall and Andersson teach that pre-curing is undesirable because it necessitates frequent cleaning of the application apparatus [Perciwall: p. 1, ll. 9-21 and Anderson: p. 1]. Based on these

> teachings, it would have been obvious to one of ordinary skill in the art to apply each component from its own, individual, dedicated nozzle, so as to avoid fouling of the nozzle that would require cleaning.... [Andersson] does not teach that the gluing system is an amino resin gluing system or feeding the amino resin and hardener components to at least first and second orifices, respectively.

The Office Action goes on to say on page 11, as a justification for combining Andersson with Lehnert:

> The gluing system of Andersson is a formaldehyde-based adhesive, preferably resorcinol-formaldehyde or resorcinol-phenol formaldehyde [p. 2, ll. 5-11]. Lehnert teaches the equivalence of phenol and amino resins as conventional two-component adhesives in the art of joining wooden surfaces to form laminates, including condensation products of formaldehyde and urea and/or melamine [p. 1, ll. 28-31 and p. 3, l. 37-p. 4, l. 9].

This basis for combining Andersson and Lehnert can only be made in hindsight, for the following reasons.

B. The Teaching of the Andersson '024 Reference

Andersson relates to a method of gluing a laminate using curable adhesives whereby resin and hardener are applied separately to the joint area (e.g., laminate surface), preferably in the form of separate parallel strands. *See*, Abstract. The object of the Andersson invention is set forth on page 2, lines 5-11.

> The object of the present invention is to solve the problems of bleeding from glue joints, glued for example with the [sic] in the production of laminated wood conventionally used formaldehyde based adhesives, preferably resorcinol-formaldehyde adhesives or resorcinol-phenolformaldehyde adhesives, by using an adhesive wherein the resin component has a limited water dilutability.

Thus, the problem addressed by Andersson is unwanted bleeding of adhesive from the joint areas. This can occur, for example, if the laminate is used in an outdoor environment exposed to rain and the glue joints become wet. The reference explains the mechanism behind this phenomenon on page 1, line 30 *et seq.*

Briefly, the use of separate application of resin and hardener, while advantageous in many respects, has the disadvantage that the components may not be completely mixed. This is because mixing necessarily occurs only on the laminate surface after the separate adhesive components have been applied. If the components are not distributed evenly on the surface, then mixing is incomplete, resulting in unreacted liquid component within the glue joint. If the laminate becomes wet, the liquid resin will dissolve in the water and bleed out, causing discoloration.

The Andersson reference notes that this problem can be solved by employing an adhesive resin with "low water dilutability." Such a resin would not bleed out when the laminate becomes wet because of lower water solubility. In discussing prior art attempts to lower water dilutability, Andersson mentions low pH at page two, lines 16-20.

> The water dilutability for the mentioned resin components can be lowered by lowering the pH of the resin to below 7.5 and suitability to a pH of 7. However, the resin will hereby get a low reactivity and this is less desirable in certain fields of use.

In the very next paragraph, the Andersson reference distinguishes its teaching from the prior art use of lowered pH.

> Improved results are achieved if the resin condensation, by means of a suitable selection of catalyst and other reaction conditions, is carried out in such a manner that a high content of methylene bridges and few free methyol groups are obtained. This resin has a low water dilutability, a high pH value and also high reactivity

The teaching of the Andersson reference can thus be summed up as follows.

1) Separate application of phenol resin and hardener can cause bleeding due to inadequate mixing.

2) The bleeding problem can be addressed by reducing water dilutability.

3) Water dilutability can be reduced by lowering the pH of the resin to below 7.5, but this is inadequate because reactivity is decreased.

4) Water dilutability can be reduced *without* lowering pH by suitable control of the reaction conditions of the phenol condensation reaction conditions.

The following conclusions can be drawn from the teaching of the Andersson reference.

1) Andersson is directed generally to the use of phenolic resins, and makes no mention of amino resins.

2) Andersson is directed *specifically* to particular condensation reaction conditions for phenolic resins in order to lower water dilutability.

3) Andersson specifically teaches away from the use of acidic conditions as a means for lowering water dilutability of phenolic resins.

C. The Teaching of the Lehnert Reference

Lehnert teaches a method for producing wood products such as plywood, and is particularly directed to an improved cold pressing technique for pre-pressing a package of veneer. The improvement is a reduction in formaldehyde emissions by lowering the ratio of formaldehyde to resin in the adhesive composition. Normally, a lower ratio cannot be used because it reduces cold tack, but in Lehnert, this is compensated for by the application of a secondary hardener along the edges of the veneer. The secondary hardener reacts quickly with the resin and holds the veneer together, eliminating the need for cold tack in the primary adhesive composition. The reference mentions that both phenol and amino resins can be used in the manufacture of plywood. See page 1, lines 28-31. The teaching of using a secondary hardener is applicable to "conventional"

formaldehyde based, curable adhesives, including both phenol and amino resin adhesives. See page 3, line 37 to page 4, line 7.

D. No rationale for substituting an amino resin in the composition of Andersson

The Examiner provides no rationale for substituting an amino resin for the phenolic resin in Andersson. His only basis for such a substitution is the bare assertion in Lehnert that the resins are equivalent

A) Conventional does not mean equivalent

While Lehnert is being cited for establishing the "equivalence" of phenol and amino resins, *nowhere in the Lehnert reference is such an equivalence set forth.* Lehnert states merely that both phenol and amino resins are *conventional.* To argue that "conventional" means "equivalent" strains the ordinary meaning of these words. Conventional in the present context means (from worldwebonline.com, an internet dictionary):

> 1) Following accepted customs and proprieties...
> 6) In accord with or being a tradition or practice accepted from the past...

The term equivalent, from the same source, is defined as:

> 1) A person or thing equal to another in value or measure or force or effect or significance etc.....
> 2) Being essentially equal to something....

Thus, phenol and amino resins may be "conventional" resins used in adhesives, and their use may be "in accord with or being a tradition or practice accepted from the past." They are not, however, "equal...in value or measure or force or significance..." The Lehnert reference itself refutes such an equivalence by establishing that phenol and amino resin systems are fundamentally *different* despite their conventionality. On page 4, lines 21-28, Lehnert states:

> When the adhesive is an amino resin the hardener can for example be an inorganic or organic acid...When the adhesive is a phenol resin the edges of the veneer layers can be coated with a basic compound.

If phenol and amino resins were "equivalent" or "essentially equal," they would not employ totally different chemistries, requiring hardeners with diametrically opposing properties, viz., acidic vs. basic. Thus Lehnert teaches that amino and phenolic resin adhesive systems are different, not equivalent, and use different hardeners. There is no teaching or suggestion in Lehnert that an amino resin could be substituted for the resorcinol or resorcinol-phenol resin in Andersson, or that a volatile *acid* hardener could also be substituted.

D. Substituting an amino resin for a phenolic resin would fatally undermine the teaching of Andersson

Quite apart from any teaching in Lehnert of equivalency, replacing the phenolic resin of Andersson with an amino resin would render the Andersson disclosure totally meaningless. As noted above, Andersson is directed to specific conditions for producing a condensation reaction of resorcinol-formaldehyde adhesives or resorcinol-phenolformaldehyde adhesives. The resulting adhesive has a pH well above neutral, and indeed maintaining a high pH is one of the goals of Andersson. By substituting an amino resin for the resorcinol-based resin in Andersson, the entire teaching of specific reaction conditions in the Andersson reference must be ignored, since they are specific to resorcinol and cannot be applied to amino resins. Moreover, as Lehnert states, amino resins have an acid hardener, and acid conditions are contradictory to the Andersson teaching.

The Federal Circuit and its predecessor have long held that if a proposal for modifying the prior art in an effort to attain the claimed invention causes the art to become inoperable or destroys its intended function, then the requisite motivation to make the modification would not have existed. See, *In re Fritch*, 23 U.S.P.Q. 2d 1780, 1783 n.12 (Fed. Cir. 1992); *In re Ratti*, 123 U.S.P.Q. 349, 352 (C.C.P.A. 1959).

Here, the Examiner's proposed modification of Andersson clearly destroys the reference's intended function.

E. The Examiner provides no motivation for modifying Andersson

Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. *In re Napier*, 34 U.S.P.Q. 2d, 1782,1784 (Fed. Cir. 1996). The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. *In re Laskowski*, 10 U.S.P.Q. 2d 1397,1399 (Fed. Cir. 1989); *In re Gordon*, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

Thus even if substituting an amino resin in Andersson did not destroy the reference's intended function, the Examiner must provide a motivation for the proposed substitution. He has presented no such evidence of motivation, relying solely on the notion of "equivalence" of amino and phenolic resins.

F. The Examiner contradicts his own rationale for equivalency

While the Examiner argues that two different types of resin, phenol and amino, are equivalent, he simultaneously maintains that resins of the *same* type are *not* equivalent to each other, since he asks appellants to "provide some rationale for the position that amino resins other than that in Example 1 function in an equivalent manner." [*See*, Interview Summary Record of October 13, 2005]. The Examiner cannot have it both ways. He cannot argue on the one hand that resins of *different* types (phenol and amino) are equivalent, and on the other hand argue that resins of the *same* type (amino) are *not* equivalent and require appellants to prove otherwise.

If there is any equivalency in Lehnert, it is that the described method of applying a hardener to the edges of a laminate can be used with conjunction with various "conventional" resin systems. However, this "equivalency" holds only in conjunction with other necessary

process conditions that are completely contradictory to both Andersson and appellants' claimed invention.

For example, Andersson teaches that pre-curing is undesirable because it necessitates frequent cleaning of the application apparatus, and therefore, according to the Examiner, each component is added on its own (*See*, page 7 of January 14, 2005 Office Action, *supra.*) Yet Lehnert requires *mixing* of resin and hardener in the applied adhesive system (Page 4, lines 5-21).

G. Example 1 of appellants' specification demonstrates unexpected results

Even assuming, *arguendo*, that the combination of Andersson and Lehnert did establish a *prima facie* case of obviousness, such obviousness is rebutted by the showing of unexpected results in Example 1 of the specification. Neither Andersson nor Lehnert recognizes the unexpected result of lower delamination when the amount of filler is below 20% in the adhesive. The Examiner requires a comparison of appellants' invention with that of Andersson. However, Andersson provides no teaching of the significance of filler levels on delamination rates. The Board of Appeals has long held that the requirement for comparing to the closest prior art precludes the USPTO from requesting tests comparing the invention to subject matter not taught in the prior art. *Ex parte Westphal,* 223 U.S.P.Q. 630 (Bd. App. 1983).

H. Addition of other secondary references does not establish obviousness

1) Menger is cited for teaching separate application of resin and hardener. However, this is inconsistent with the teaching of Lehnert, which requires mixing. If references are inconsistent, they "teach away" from each other. Such teaching away leads a person of ordinary skill in a direction divergent from the path that was taken by the applicant. *Tec Air, Inc. v. Denso Mfg. Mich. Inc.*, 52 U.S.P.Q.2d 1294, 1298 (Fed. Cir. 1999). The examiner had yet to explain the inconsistency in the combined teaching. Hence claims 40 and 77 are patentable despite the addition of Menger.

2) Toshio is cited for teaching the application of adhesive components in strands. Again, however, its combination with Andersson and Lehnert does not explain its inconsistency with Lehnert, which requires mixing of resin components. Hence claims 60-64 and 66-69 are patentable.

3) Perciwall is cited for teaching the equivalency of formic acid with various other acids. However, the above noted defects in the combination of Andersson and Lehnert are not overcome by the addition of Perciwall. Hence claim 95 is not rendered obvious by the combined teaching.

4) The combination of Addersson, Lehnert, Toshio and Perciwall also does not render obvious claim 65, for reasons similar to those given above.

I. Separate patentability of claims 56, 57 and 58

Claims 56 recites that the hardener is free from filler. Claim 57 recites that the hardener comprises a filler in an amount of less than 15% by weight, and claim 58 recites filler in an amount of less than 10% by weight. Laminated structures containing these amounts of filler all show unexpectedly low delamination rates, as summarized in Example 1 of appellants' specification. In that example, kaolin, a commonly used filler, was added to a hardener in amounts of 5, 15 and 30% by weight. Another laminated beam was constructed using hardener having no filler. As can be seen from the table accompanying Example 1, when no filler was added, there was no delamination. Even when 15% filler is added, the level of delamination was at an acceptable rate of 6.1%. However, at 30% filler addition, delamination rate was very high at a rate of 24%. This rate is unacceptable, and demonstrates a heretofore unknown phenomenon, namely, that high amounts of filler in amino resin gluing systems can have an adverse effect on delamination rate.

The examiner suggested that he would "consider" patentability if experiments similar to appellants' Example 1 were performed on the compositions taught by Andersson, presumably showing that such unexpectedly low delamination rates would *not* occur using Andersson's

adhesive system. It is appellants' position, however, that such experiments are not germaine to patentability.

Andersson provides no teaching or suggestion that the level of filler is of any significance in delamination rate, regardless of the adhesive system used. Hence it could be argued that even if appellants had claimed the *same* adhesive system as Andersson, they could in theory have demonstrated patentability by showing unexpected results in using different filler levels. Given this, it is not understood how or why a demonstration that delamination rates do *not* differ with the level of filler in Andersson's adhesive system render appellants' invention patentable.

J. Rejection of claim 94 under 35 U.S.C. §112

Claim 94 is rejected as being indefinite, the examiner alleging that there is no support in the application as filed for applying the hardener on top of the resin. Support can be found in the following passages from page 2 of the PCT application, beginning at line 21.

> In the method, the resin component is preferably applied first in the form of strands, whereupon the hardener is applied in the form of strands.....the later applied strands may overlap, do not overlap, or do not contact, respectively, the previously applied strands of the other components.

This passage clearly teaches that the hardener can be applied on top of the resin, as the strands can overlap.

For the above reasons, it is respectfully requested that the rejections be reversed.

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Date: February 26, 2007

Respectfully submitted,

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Claims Appendix

1-38 (Cancelled)

39. A method of applying an amino resin gluing system to a substrate, comprising the steps of:

(a) feeding an amino resin component to at least a first orifice;

(b) feeding a hardener component to at least a second orifice; and

(c) discharging said resin and hardener components through said respective first and second orifices in the form of strands or as a spray onto the substrate, said discharged components remaining physically isolated from each other until at least one of said components contacts said substrate;

wherein the hardener comprises a volatile acid and is either free from filler or includes filler in an amount of less than 20% by weight.

40. A method according to claim 39, wherein the resin component is applied in the form of strands, and thereafter the hardener component is applied by means of spraying.

41. A method according to claim 39, wherein the components of the gluing systems are separately applied in the form of strands, and in optional order, onto the substrate.

42. A method according to claim 39, wherein the later applied strands of one component substantially overlap the corresponding previously applied strands of the other component.

43. A method according to claim 39, wherein the hardener component is applied in the form of strands on top of the resin component applied in the form of strands.

44. A method according to claim 39, wherein the later applied strands of one component do not overlap the corresponding previously applied strands of the other component.

45. A method according to claim 39, wherein the later applied strands of one component do not contact the corresponding previously applied strands of the other component.

46. A method according to claim 39, wherein the hardener comprises formic acid in an amount of 10-30% by weight.

47-55. (Cancelled)

56. A method according to claim 39, wherein the hardener is free from filler.

57. A method according to claim 39, wherein the hardener comprises a filler in an amount of less than 15% by weight.

58. A method according to claim 39, wherein the hardener comprises a filler in an amount of less than 10% by weight.

59. A method according to claim 39, wherein the hardener comprises a thickener.

60. A method of separate application of resin and hardener components of an amino resin gluing system onto a substrate, in the form of strands, wherein the hardener comprises a volatile acid and is either free from filler or comprises filler in an amount of less than 20% by weight, and wherein the resin and hardener components are discharged from different hollow members each having a plurality of orifices, the orifices of one said hollow member being either aligned in, or parallel displaced in, a machine direction in relation to the corresponding orifices of the other said hollow member.

61. A method according to claim 60, wherein the later applied strands of one component substantially overlap the corresponding previously applied strands of the other component.

62. A method according to claim 60, wherein the hardener component is applied in the form of strands on top of the resin component applied in the form of strands.

63. A method according to claim 60, wherein the later applied strands of one component do not overlap the corresponding previously applied strands of the other component.

64. A method according to claim 60, wherein the later applied strands of one component do not contact the corresponding previously applied strands of the other component.

65. A method according to claim 60, wherein the hardener comprises formic acid in an amount of 10-30% by weight.

66. A method according to claim 60, wherein the hardener is free from filler.

67. A method according to claim 60, wherein the hardener comprises a filler in an amount of less than 15% by weight.

68. A method according to claim 60, wherein the hardener comprises a filler in an amount of less than 10% by weight.

69. A method according to claim 60, wherein the hardener comprises a thickener.

70. A method of separate application of resin and hardener components of an amino resin gluing system onto a substrate, in the form of strands, wherein the hardener comprises a volatile acid and is either free from filler or comprises filler in an amount of less than 20% by weight, and wherein the strands of resin and the strands of hardener do not overlap.

71. A method according to claim 70, wherein the hardener comprises formic acid in an amount of 10-30% by weight.

72. A method according to claim 70, wherein the hardener is free from filler.

73. A method according to claim 70, wherein the hardener comprises a filler in an amount of less than 15% by weight.

74. A method according to claim 70, wherein the hardener comprises a filler in an amount of less than 10% by weight.

75. A method according to claim 39, wherein the hardener component further comprises a thickener.

76. A method of separate application of resin and hardener components of an amino resin gluing system onto a substrate, wherein the hardener comprises a volatile acid and a thickener, and is either free from filler or comprises filler in an amount of less than 20% by weight, and wherein the components of the gluing system are applied in the form of strands or by means of spraying, or any combination thereof, in optional order of application.

77. A method according to claim 76, wherein the resin component is applied in the form of strands, and thereafter the hardener component is applied by means of spraying.

78. A method according to claim 76, wherein the components of the gluing systems are separately applied in the form of strands, and in optional order, onto the substrate.

79. A method according to claim 76, wherein the later applied strands of one component substantially overlap the corresponding previously applied strands of the other component.

80. A method according to claim 76, wherein the hardener component is applied in the form of strands on top of the resin component applied in the form of strands.

81. A method according to claim 76, wherein the later applied strands of one component do not overlap the corresponding previously applied strands of the other component.

82. A method according to claim 76, wherein the later applied strands of one component do not contact the corresponding previously applied strands of the other component.

83. A method according to claim 76, wherein the hardener comprises formic acid in an amount of 10-30% by weight.

84. A method according to claim 76, wherein the hardener is free from filler.

85. A method according to claim 76, wherein the hardener comprises a filler in an amount of less than 15% by weight.

86. A method according to claim 76, wherein the hardener comprises a filler in an amount of less than 10% by weight.

87. A hardener composition for use in a method of separate application of resin and hardener components of an amino resin gluing system onto a substrate, wherein the hardener is either free from filler or comprises a filler in an amount of less than 20% by weight and a volatile acid, wherein the components of the gluing system are applied in the form of strands or by means of spraying, or any combination thereof, in optional order of application.

88. A hardener composition according to claim 87, comprising formic acid in an amount of 10-30% by weight.

89. A hardener composition according to claim 87, wherein the volatile acid is selected from the group consisting of formic acid, acetic acid, pyrovic acid and mixtures thereof.

90. A hardener composition according to claim 87, comprising a filler in an amount of less than 15% by weight.

91. A hardener composition according to claim 87, comprising a filler in an amount of less than 10% by weight.

92. A hardener composition according to claim 87, which is free from filler.

93. A hardener composition according to claim 87, comprising a thickener.

94. A method of separate application of resin and hardener components of an amino resin gluing system onto a substrate, wherein the hardener comprises a volatile acid and a thickener, wherein the later applied strands of one component substantially overlap the corresponding previously applied strands of the other component, wherein the hardener component is applied on top of the resin component, wherein the volatile component of said hardener comprises formic acid in an amount of 10-30% by weight, and wherein the hardener is free from filler.